

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-008486

(43)Date of publication of application : 12.01.2001

(51)Int.Cl.

H02P 6/16  
B66B 1/30

(21)Application number : 11-171921

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(22)Date of filing : 18.06.1999

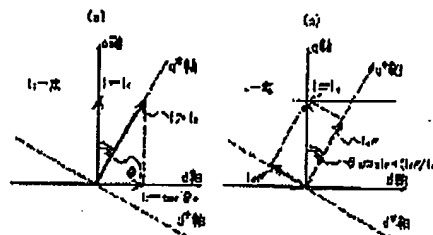
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## (54) CONTROLLER FOR PERMANENT MAGNET SYNCHRONOUS MOTOR

## (57)Abstract:

PROBLEM TO BE SOLVED: To precisely correct the phase with a simple constitution by controlling d-axis current, so that the current of an armature becomes minimum when load torque is constant and correcting the rotary position of a magnetic pole.

SOLUTION: In a device, a current  $I$  of an armature becomes equal to  $I_q$  and becomes minimum, when a d-axis current command  $I_d^*$  is controlled to be zero, when a phase error  $\theta_e$  does not exist when load torque is constant. However, if the phase error  $\theta_e$  to exist, a d-axis current of  $I_d = I_q \tan \theta_e$  flows, if it is controlled to  $I_d = 0$ . Thus, it becomes  $I > I_q$ , and the current of the armature does not become minimum. Thus, the d-axis current command  $I_d^*$  is controlled, the current of the armature is changed, and a minimum value  $I_{min}$  is searched. The current  $I_{min}$  of the armature at the time of the minimum value is considered to be the q-axis current  $I_q$ , when the error does not exist. The error  $\theta_e$  is calculated from the d-axis current command value  $I_{d1}^*$  at that time. Then, phase correction is made precisely with a simple constitution, and the device can be driven without dropping the characteristic of a permanent magnet synchronous motor.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the  
examiner's decision of rejection or application  
converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

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